

REMARKS

In the Office Action Mailed March 29, 2006, claims 1, 3, 5-9, 11, 13, 14, 16, 18 and 19 were rejected and claims 3, 5, 16 and 18 were objected to.¹ Claims 3, 5, 16 and 18 were objected to as depending from canceled claims. Claims 1, 3, 6-7, 9, 11, 14 and 16 were rejected under 35 U.S.C. §102(b) as being anticipated by Budde et al. (U.S. Pat. No. 5,896,246). Claim 19 was rejected under 35 U.S.C. §103(a) as being obvious over Budde et al. in view of Gill et al. (U.S. Pat. No. 5,561,570). Claim 8 was rejected under 35 U.S.C. §103(a) as being obvious over Budde et al. in view of Maruyama et al. (U.S. Pat. No. 5,898,540). Claims 5, 13 and 18 were rejected under 35 U.S.C. §103(a) as being obvious over Budde et al. in view of Maruyama in further view of Davis et al. (U.S. Pat. No. 6,778,362).

The present amendments clarify the subject matter claimed, without introducing new issues for examination. Therefore, further prior art searching should be unnecessary.

Examiner Interview

A telephone interview was conducted on April 12, 2006 between Austen Zuege, for Applicants, and Examiner Allen Cao. The obviousness rejection in the Office Action was discussed, and Examiner Cao clarified that only claim 19 was rejected under §103 in the Office Action. The other claims referenced on page 4, ¶5 of the Office Action were listed in error and were not rejected under §103. The allowability of the claims was not discussed, and no agreement was reached regarding the pending claims.

Claim Objections

Claims 3, 5, 16 and 18 were objected to as depending from canceled claims. With this Amendment, claims 3 and 5 have been amended to depend from independent claim 1, and claims 16 and

¹The cover page of the March 29, 2006 Office Action listed all of the pending claims as being objected to and none of the pending claims as rejected. Applicants believe the cover sheet was printed with an error and will treat the substantive rejections and objections in the body of the Office Action as controlling over the cover sheet.

18 have been amended to depend from independent claim 14. Claims 3, 5, 16 and 18 are now in proper form and the objections should be withdrawn. Notification to that effect is requested.

Claim Rejections - 35 U.S.C. §102(b)

Claims 1, 3, 6-7, 9, 11, 14 and 16 were rejected under 35 U.S.C. §102(b) as being anticipated by Budde et al. (U.S. Pat. No. 5,896,246).

Amended independent claim 1 relates to an actuator for data storage devices. The actuator according to amended independent claim 1 requires an actuator arm being rotatable in a rotational plane for supporting a transducer with respect to a data storage medium, and a head gimbal assembly including a load beam having a bendable hinge region, a slider an air-bearing surface, and a gimbal connecting the slider to the distal region of the load beam. The head gimbal assembly must be connected to the actuator arm at an inclined angle with respect to the rotational plane of the actuator arm.

Amended independent claim 9 relates to a data storage device. The data storage device of amended independent claim 9 requires a data storage disc, a rotatable arm, and a head gimbal assembly attached to the rotatable arm at an angle so that when loaded against the disc, the head gimbal assembly is concave in a direction facing away from the disc. The head gimbal assembly must include a load beam having a flexible hinge region, a slider for carrying a transducer, and a gimbal connecting the slider to the distal region of the load beam.

Amended independent claim 14 relates to an actuator for positioning a transducer with respect to a storage medium in a storage device. The actuator according to amended independent claim 14 requires a mounting block with a sloped mounting surface greater than zero degrees but less than ninety degrees with respect to a top plane of the mounting block so that the sloped mounting surface creates a downward plane, and a head gimbal assembly attached to the sloped mounting surface of the mounting block. The head gimbal assembly must include a load beam having a bendable hinge region, a slider for carrying a transducer, and a gimbal connecting the slider to the distal region of the load beam.

Budde et al. discloses a suspension fabricated from silicon. The suspension assembly 10 of Budde et al. includes a load beam 14 having a thin region 30. (Budde et al., col. 7, ll. 56-59; FIG. 3). The load beam 14 is part of a solid monolithic structure made of silicon, which is a brittle material and "cannot be plastically deformed." (Budde et al., col. 7, ll. 18-21 and 30-33; col. 9, ll. 7-15). Brittle materials do not permit significant elastic deformation and/or plastic deformation, that is, brittle materials are not bendable or flexible. The thin region 30 of the load beam 14 lessens stiffness of the load beam 14 slightly, but maintains a relatively high stiffness to avoid and reduce unwanted vibrations. (Budde et al., col. 7, line 59 to col. 8, line 37). The resulting suspension assembly 10 of Budde et al. is shown only in a straight configuration, and Budde et al. does not disclose a bend in the load beam 14 (either in the thin region 30 or elsewhere). (Budde et al., FIGS. 2, 4 and 6).

Budde et al. does not show, teach or disclose each and every element of amended independent claims 1, 9 and 14 because Budde et al. does not show, teach or disclose a bendable or flexible hinge region on a suspension. The thinness of region 30 of the load beam 14 of Budde et al. lowers stiffness and may permit some slight deflection due to vibrations or other forces, but the thin region 30 of the load beam 14 is not a *bendable or flexible* hinge region because the thin region 30 is made of brittle silicon material. As noted above, brittle materials do not permit significant elastic deformation and/or plastic deformation, which are the characteristics bendable or flexible structures. Rather, brittle materials are subject to fracture when subjected to stress and have insignificant abilities to deform (i.e., bend or flex), either elastically or plastically. The brittle silicon material disclosed by Budde et al. cannot form a bendable or flexible hinge region as required by amended independent claims 1, 9 and 14. Indeed, Budde et al. teaches away from such bendable or flexible structures by distinguishing the disclosed invention from bendable or flexible prior art structures. (Budde et al., col. 9, ll. 7-11). Thus, amended independent claims 1, 9 and 14 are allowable over the cited art, and the rejections of amended independent claims 1, 9 and 14 under §102 should be withdrawn. Notification to that effect is requested.

Claims 3 and 6-7 depend from amended independent claim 1, claim 11 depends from amended independent claim 9, and claim 16 depends from amended independent claim 14. Because dependent claims 3, 6-7, 11 and 16 include all of the limitations of their respective base claims, they are likewise allowable over the cited art for the reasons stated above with respect to the rejections of amended independent claims 1, 9 and 14. Thus, all of the rejections of claims 1, 3, 6-7, 9, 11, 14 and 16 under §102 should be withdrawn. Notification to that effect is requested.

Claim Rejections - 35 U.S.C. §103(a)

Claim 8 was rejected under 35 U.S.C. §103(a) as being obvious over Budde et al. in view of Maruyama et al. (U.S. Pat. No. 5,898,540). The Office Action cites Maruyama et al. as disclosing a wedge 5-5 (3/29/2006 Office Action, p. 4, ¶6, citing Maruyama et al., FIG. 21c). However, for the same reasons as discussed above with respect to the rejections under §102(b), Budde et al. does not disclose a load beam having a *bendable hinge region* as required by amended independent claim 1, from which claim 8 depends. Therefore, the cited references do not disclose, teach or suggest each and every limitation of the dependent claim 8, and the rejection under §103 should be withdrawn. Notification to that effect is requested.

Claims 5, 13 and 18 were rejected under 35 U.S.C. §103(a) as being obvious over Budde et al. in view of Maruyama in further view of Davis et al. (U.S. Pat. No. 6,778,362). The Office Action cited Davis et al. as disclosing a notch 164 at a hinge region 180 of a load beam 166. (3/29/2006 Office Action, p. 5, ¶7, citing Davis et al., FIGS. 9B and 9C). However, for the same reasons as discussed above with respect to the rejections under §102(b), Budde et al. does not disclose a load beam having a *bendable or flexible hinge region* as required by amended independent claims 1, 9 and 14, from which claims 5, 13 and 18 depend, respectively. Therefore, the cited references do not disclose, teach or suggest each and every limitation of the dependent claims 5, 13 and 18, and the rejections under §103 should be withdrawn. Notification to that effect is requested.

Claim 19 was rejected under 35 U.S.C. §103(a) as being obvious over Budde et al. (U.S. Pat. No. 5,896,246) in view of Gill et al. (U.S. Pat. No. 5,561,570). Independent claim 19 relates to a method of assembling an actuator that requires attaching an unbent head gimbal assembly to a mounting block with a sloped surface and loading the head gimbal assembly onto a data storage medium to create a bend in a bendable hinge region of the head gimbal assembly so that a portion of the head gimbal assembly assumes a concave shape facing away from the data storage medium.

The relevant disclosure of Budde et al. is discussed above, with respect to the rejections under §102(b).

Gill et al. discloses a dynamically loaded suspension for a disc drive that utilizes contact recording. Gill et al. explicitly distinguishes between contact recording drives and drives that utilize sliders with an air bearing surface for "flying" above a recording medium on a cushion of air. (Gill et al., col. 1, line 15 to col. 2, line 38). The disclosure of Gill et al. is specifically directed to contact-type drives. (Gill et al., col. 3, ll. 11-14). Gill et al. discloses a combination suspension/transducer-slider structure (or reed) 130 supported by an actuator arm 34. (See Gill et al. FIG. 5). The combination suspension/transducer-slider structure 130 of Gill et al. is flexed along its entire length, from end to end, to maintain contact with the magnetic storage media 200. (Gill et al., FIG. 5). Gill et al. teaches away from problematic "lift-off", which is any separation (i.e., any break in contact) between the transducer/suspension assembly 130 and the magnetic storage media 200. (See Gill et al., col. 2, line 4 to col. 3, line 17; col. 5, ll. 23-43; col. 6, ll. 7-23). In order to prevent lift-off, Gill et al. increases suspension/transducer loading by providing a concave suspension--without a hinge region--and shapes the suspension like an airfoil to provide dynamic loading to counteract lift-off. (Gill et al., col. 5, line 53 to col. 6, line 50; FIGS. 5 and 6).

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000); MPEP 2143.01 and 2143.03. Rejections under 35 U.S.C. §103 must also rest on a factual basis. In making such a rejection,

the examiner has the initial duty of supplying the requisite factual basis, and may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. *In re Warner*, 37 F.2d 1011, 1017 (CCPA 1967), *cert denied*, 389 U.S. 1057 (1968); see also *In re Mills*, 916 F.2d 680, 682 (Fed. Cir. 1990) (although a device may be capable of modification, there must be a suggestion or motivation in the reference to do so). Moreover, if the proposed modification of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the cited references are not sufficient to render a claim *prima facie* obvious. *In re Ratti*, 270 F.2d 810 (CCPA 1959).

Here, however, the cited references cannot be combined as suggested at page 4 of the Office Action, and there is no objective evidence of record to establish a motivation for the modifications proposed. First, Budde et al. and Gill et al. cannot be combined as suggested in the March 31, 2006 Office Action. The invention of Budde et al. cannot be modified to include bendable hinge region. Budde et al. states that "[i]n prior art stainless steel suspension assemblies, the assembly was plastically deformed or bent slightly to force the slider against the disc surface. Unfortunately, the present invention is fabricated of silicon *which is a brittle material . . .*" (Budde et al., col. 9, ll. 7-15) (emphasis added). Budde et al. teach the use of a brittle material and thus teaches away from the use of suspension assemblies with a bendable hinge region that allows bending in a hinge region. The modification to Budde et al. suggested in the March 29, 2006 Office Action would contradict the principles of operation expressly taught by Budde et al., which utilizes a brittle (i.e., non-bendable) silicon material to provide loading of its suspension.

Second, Gill et al. does not disclose or suggest a suspension with any hinge region. Rather, Gill et al. discloses a compliant suspension/transducer-slider structure (or reed) 130 that is flexed along its entire length to produce a dynamic loading force. (Gill et al., col. 5, ll. 23-39; col. 5, ln. 53 to col. 6, ln.

28; FIGS. 4B and 5).² As is clear from the figures of Gill et al., the suspension/transducer-slider structure 130 is flexed gradually across its entire length, rather than being bent in a discrete hinge region.

Thus, amended independent claim 19 is allowable over the cited references, and the rejection under §103 should be withdrawn. Notification to that effect is requested.

CONCLUSION

Upon review of the cited art, it is believed that all of the pending claims patentably define the invention over all of the art of record. It is believed that the above amendments and remarks place all pending claims in allowable form and a Notice of Allowance is respectfully requested.

The Commissioner is authorized to charge any additional fees associated with this paper or credit any overpayment to Deposit Account No. 11-0982.

Respectfully submitted,

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²FIG. 4B of Gill et al. appears to disclose prior art structures, rather than the invention of Gill et al. (See Gill et al., col. 5, ll. 4-6).